

Name_____

Chemistry I: Gas Law Problems

Period_____ Date_____

Ideal Gas Law 5

SHOW ALL WORK for credit!!

1. How many moles of gas are contained in 890.0 mL at 22° C and 750.0-mm Hg pressure?
2. A 1.09 g sample of H₂ is contained in a 2.00 L container at 20.0 °C. What is the pressure in this container in mm Hg? Hint: convert grams of H₂ to moles of H₂.
3. Calculate the volume 3.00 moles of a gas will occupy at 24.0 °C and 762.4 mmHg.
4. How many moles of a gas would be present in a gas trapped within a 37.0 liter vessel at 80.00 °C at a pressure of 2.50 atm?
5. What volume will 1.27 moles of helium gas occupy at STP?
6. At what temperature will 0.654 moles of neon gas occupy 12.30 liters at 1.95 atmospheres?

7. If I have 4 moles of a gas at a pressure of 5.6 atm and a volume of 12 liters, what is the temperature?

8. If I have an unknown quantity of gas at a pressure of 1.2 atm, a volume of 31 liters, and a temperature of 87 °C, how many moles of gas do I have?

9. If I contain 3 moles of gas in a container with a volume of 60 liters and at a temperature of 400 K, what is the pressure inside the container?

10. If I have 7.7 moles of gas at a pressure of 0.09 atm and at a temperature of 56 °C, what is the volume of the container that the gas is in?

11. If I have 17 moles of gas at a temperature of 67 °C, and a volume of 88.89 liters, what is the pressure of the gas?

Determining molar mass (molecular weight) with the Ideal Gas Law.

12. A 30.6 g sample of gas occupies 22.4 L at STP. What is the molecular weight of this gas?

13. A 40.0 g gas sample occupies 11.2 L at STP. Find the molecular weight of this gas.

14. A 12.0 g sample of gas occupies 19.2 L at STP. What is the molecular weight of this gas?

15. A 96.0 g sample of a gas occupies 48.0 L at 700.0 mmHg and 20.0 °C. What is its molecular weight?

16. At STP 3.00 liters of an unknown gas has a mass of 9.50 grams. Calculate its molar mass.

17. At STP 150.0 mL of an unknown gas has a mass of 0.250 gram. Calculate its molar mass.

18. A 1.089 g sample of a gas occupies 4.50 L at 20.5 °C and 0.890 atm. What is its molar mass?

19. A 0.190 g sample of a gas occupies 250.0 mL at STP. What is its molar mass? What gas is it? Compare molar mass of common gases

20. If 9.006 grams of a gas are enclosed in a 50.00 liter vessel at 273.15 K and 2.000 atmospheres of pressure, what is the molar mass of the gas? What gas is this?